**Algebra IB Name:**

**Mr. Stiff Period:**

**Unit 1 Study Guide Date:**

1. What is a function?

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1. Based on your definition, would the relationship between the height of a sunflower and the number of hours of sunlight it gets be a function? Give as clear and specific of an explanation as possible.

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1. A friend wants to do know how he can tell that a group of inputs and outputs in an input-output table is really a function. Give him a **step by step** explanation. Number your steps, and be as clear and specific as possible.
2. What is meant by the *rule* of a function?

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1. Give an example of a function and explain its *rule* in words.

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1. Are the following input-output representations **functions**? Please **circle** the correct choice **AND write a brief explanation on the side for any relation that is NOT a function.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input** | 4 | 2 | -5 | 9 |
| **Output** | 7 | 1 | 4 | 0 |

**Function**

**Not a function**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **x** | 3 | 2 | 0 | 3 | 4 |
| **y** | -8 | 1 | 6 | 5 | 10 |

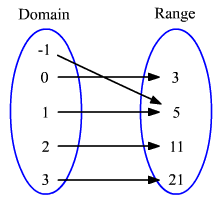
**Function**

**Not a function**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **x** | -2 | 0 | 2 | 5 | 7 |
| **f(x)** | 11 | 5 | -3 | 3 | 5 |

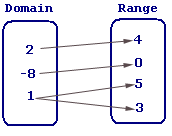
**Function**

**Not a function**

1. 

**Function**

**Not a function**

1. 

**Function**

**Not a function**

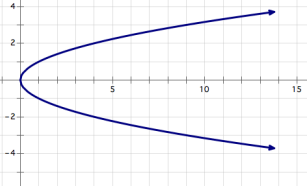
**Function**

**Not a function**

1. **{ (1, 6) (2, 3) (5, 7) (1, 10) }**

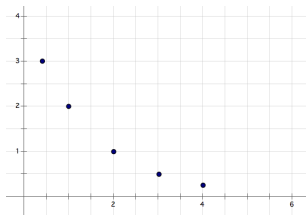
**Function**

**Not a function**

1. **{ (-7, 1) (-5, 3) (1, 9) (2, 11) }**
2. 

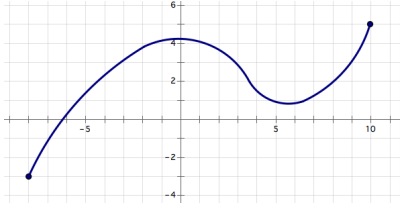
**Function**

**Not a function**



**Function**

**Not a function**



**Function**

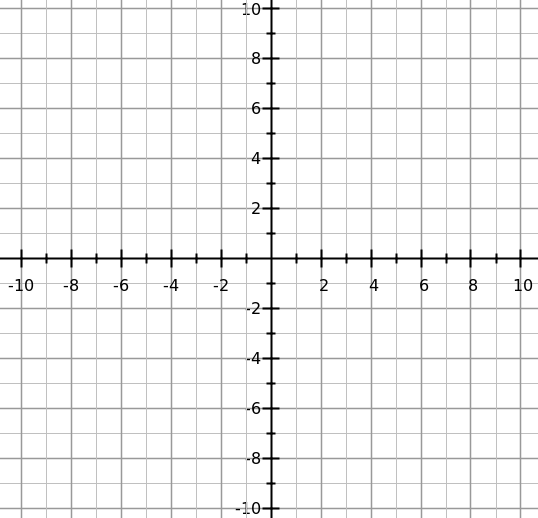
**Not a function**

1. Is the coordinate a part of the function ? How do you know?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Write out the following function’s rules in words as a set of directions to follow to get the output.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Use the function’s rule to complete an input-output table **and** graph the function

**.** 

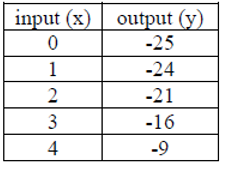
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **x** | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| **y** |  |  |  |  |  |  |  |

1. Determine the type of function represented by the equation or graph. Choose from the following list: linear, quadratic, absolute value, exponential, square root, and reciprocal.

|  |  |  |
| --- | --- | --- |
| Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |  |
| --- | --- | --- |
| Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Function Type:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

1. Sketch the basic shape that the following functions will have:



1. **Without graphing**, describe what the graph of this table would look like.
2. Write a story that could match the table in number 12.
3. Draw a graph that shows the relationship between your distance from home and time, and that matches the following story.

*You leave your home running at a constant rate. After several miles, you stop for a while to get a drink of water and rest. Then you walk slowly back home.*

1. Use the graph **below** to answer the following:

A. Find . E. Is  positive or negative?

B. Find . F. For what values of *x* is?

C. Find . G. For what values of *x* is *f*(*x*) = 2?

D. Is  positive or negative?

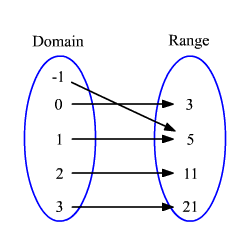


1. Use the input-output table for the function *f(x)* to answer the questions below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **input** | **0** | **5** | **7** | **12** | **14** |
| **output** | **5** | **20** | **26** | **41** | **47** |

* 1. The value of when is \_\_\_\_\_\_\_\_\_\_\_\_\_

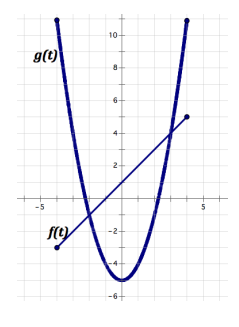
1. Use the mapping diagram for the function to answer the questions below.



* 1. The value of when is \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Use the function equation to answer the questions below
   1. The value of when is \_\_\_\_\_\_\_\_\_\_\_\_\_
2. The **number of Instagram followers *n*** that Corey has is a function of the number of **hilarious pictures he posts *h*** and follows the rule .
3. What does  **mean** (in words)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Calculate: \_\_\_\_\_\_\_\_\_\_\_\_\_
5. What does **mean** (in words)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Use the function rule to calculate the value of *h* for .
7. Fill in the blanks.
   1. For ,
   2. For in the function above, \_\_\_\_\_\_\_\_\_
8. The amount of **money (*m*)** you make is a function of the number of **hours (h)** you work at your job and follows the equation Explain what means **in words**.

**means** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Use the graph of the functions *g(x*) and *f(x)* to answer the questions below.**(20 points)
2. 2.

3. 4.

1. For what value of does ?
2. For what values of does ?
3. True or False? ?
4. True or False? ?
5. At what *x* value(s) does ?
6. Name *x* value for which .